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09/942,298	08/29/2001	Mehdi Tavassoli Kilani	3927P013	6646
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BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			FAN, CHIEH M	
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			2638	

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Please find below and/or attached an Office communication concerning this application or proceeding.



## **DETAILED ACTION**

### ***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In particular, the abstract contains the undesirable word "disclosed" in line 1.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 9-15, 18, 24-27, 29-32 and 34-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Kojima et al. (U.S. Patent No. 5,659,582, hereinafter "Kojima").

Regarding claim 1, Kojima teaches an apparatus comprising: an estimating unit (172, 150 in Fig. 14) to estimate a distribution of input signal level; and an integrator (130 in Fig. 14, note that the up-down counter may be viewed as an integrating means, see col. 23, line 58 or col. 24, line 17) to adjust a gain based upon the distribution for an automatic gain control (note that the output of 130 is used to control the variable gain amplifier 106 in Figs 1-5).

Regarding claim 2, wherein the estimating unit comprises: a comparator (146, 148 in Fig. 14) to compare the input signal against one or more reference threshold values (upper threshold and lower threshold in Fig. 14); and a counter (150 in Fig. 14) to estimate the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period.

Regarding claim 3, the comparator compares the input signal level against a first reference threshold value and a second threshold value (upper threshold and lower threshold in Fig. 14); and the counter counts occurrences in which the input signal level is above the first reference threshold value and occurrences in which the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 4, wherein the first reference threshold value is higher than the second reference threshold value (upper threshold is higher than lower threshold in Fig. 14).

Regarding claim 5, the counter counts up when the input signal level is above the first reference threshold value and counts down when the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 6, the integrator adjusts the gain based upon the occurrences counted during the given period (element 130 in Fig. 14 outputs the control signal based on the output of element 150 in Fig. 14; also see col. 16, lines 62-65).

Regarding claim 9, Kojima teaches that the output count value of the counter 130 indicates whether the average variation of the reception power deviates from the desired value toward a smaller value or a larger value and the degree of deviation (col. 17, lines 14-18). It is therefore possible to control the power of the received signal output from the variable gain amplifier to be constant by controlling the gain of the variable gain amplifier by using the count value as the control signal (col. 17, lines 19-22). Kojima also teaches that the gain of the variable gain amplifier is proportional to the control signal (col. 21, lines 18-22). That is, Kojima teaches using a larger gain-adjusting step if the average variation of the reception power deviates from the desired value toward a larger value, and vice versa. Therefore, Kojima teaches the claimed varying the speed by which the gain is adjusted.

Regarding claim 10, Kojima teaches a method comprising: estimating a distribution of input signal level (172, 150 in Fig. 14); and adjusting a gain based upon the distribution for an automatic gain control (130 in Fig. 14, note that the output of 130 is used to control the variable gain amplifier 106 in Figs 1-5).

Regarding claim 11, wherein estimating the distribution comprises: comparing the input signal level against one or more reference threshold values (146, 148 in Fig. 14); and estimating the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (150 in Fig. 14).

Regarding claim 12, wherein comparing the input signal level against a first reference threshold value and a second threshold value (upper threshold and lower threshold in Fig. 14); and counting occurrences in which the input signal level is above the first reference threshold value and occurrences in which the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 13, the first reference threshold value is higher than the second reference threshold value (upper threshold is higher than lower threshold in Fig. 14).

Regarding claim 14, wherein counting up when the input signal level is above the first reference threshold value and counting down when the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 15, wherein adjusting the automatic gain control based upon the occurrences counted during the given period (element 130 in Fig. 14 outputs the control signal based on the output of element 150 in Fig. 14; also see col. 16, lines 62-65).

Regarding claim 18, Kojima teaches that the output count value of the counter 130 indicates whether the average variation of the reception power deviates from the desired value toward a smaller value or a larger value and the degree of deviation (col. 17, lines 14-18). It is therefore possible to control the power of the received signal

output from the variable gain amplifier to be constant by controlling the gain of the variable gain amplifier by using the count value as the control signal (col. 17, lines 19-22). Kojima also teaches that the gain of the variable gain amplifier is proportional to the control signal (col. 21, lines 18-22). That is, Kojima teaches using a larger gain-adjusting step if the average variation of the reception power deviates from the desired value toward a larger value, and vice versa. Therefore, Kojima teaches the claimed varying the speed by which the gain is adjusted.

Regarding claim 24, Kojima teaches a communication system comprising: a receiver (100 in Fig. 1) to receive the analog signal, the receiver including an automatic gain control unit (114, 106 in Fig. 1) to maintain a constant level of the analog signal for processing in the receiver, the automatic gain control unit including: an estimating unit (172, 150 in Fig. 14) to estimate a distribution of input signal level; and an integrator (130 in Fig. 14, note that the up-down counter may be viewed as an integrating means, see col. 23, line 58 or col. 24, line 17) to adjust a gain based upon the distribution for the automatic gain control (note that the output of 130 is used to control the variable gain amplifier 106 in Figs 1-5). Also note that since the receiver receives the analog signal, it is inherent there is a transmitter to transmit an analog signal.

Regarding claim 25, wherein the estimating unit comprises: a comparator (146, 148 in Fig. 14) to compare the input signal level against one or more reference threshold values; and a counter (150 in Fig. 14) to estimate the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (col. 18, lines 20-28).

Regarding claim 26, the comparator compares the input signal level against a first reference threshold value and a second threshold value (upper threshold and lower threshold in Fig. 14); and the counter counts occurrences in which the input signal level is above the first reference threshold value and occurrences in which the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 27, wherein the first reference threshold value is higher than the second reference threshold value (upper threshold is higher than lower threshold in Fig. 14).

Regarding claim 29, Kojima teaches an automatic gain control apparatus comprising: a comparator (146, 148 in Fig. 14) to compare input signal level against one or more reference threshold values; a counter (150 in Fig. 14) to count occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (col. 18, lines 20-28); and an integrator (130 in Fig. 14, note that the up-down counter may be viewed as an integrating means, see col. 23, line 58 or col. 24, line 17) to adjust a gain for automatic gain control, the gain adjusted based upon the occurrences counted (note that the output of 130 is used to control the variable gain amplifier 106 in Figs 1-5).

Regarding claim 30, wherein the comparator compares the input signal level against a first reference threshold value and a second threshold value (upper threshold and lower threshold in Fig. 14); and the counter counts occurrences in which the input signal level is above the first reference threshold value and occurrences in which the input signal level is below the second reference threshold value (col. 18, lines 20-28).



Regarding claim 31, wherein the first reference threshold value is higher than the second reference threshold value (upper threshold is higher than lower threshold in Fig. 14).

Regarding claim 32, wherein the counter counts up when the input signal level is above the first reference threshold value and counts down when the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 34, Kojima teaches a method for automatic gain control comprising: comparing input signal level against one or more reference threshold values (146, 148 in Fig. 14); counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (150 in Fig. 14); and adjusting a gain for automatic gain control based upon the occurrences counted (130 in Fig. 14, note that the output of 130 is used to control the variable gain amplifier 106 in Figs 1-5).

Regarding claim 35, wherein: comparing the input signal level against a first reference threshold value and a second threshold value (upper threshold and lower threshold in Fig. 14); and counting occurrences in which the input signal level is above the first reference threshold value and occurrences in which the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 36, Kojima teaches that the output count value of the counter 130 indicates whether the average variation of the reception power deviates from the desired value toward a smaller value or a larger value and the degree of deviation (col. 17, lines 14-18). It is therefore possible to control the power of the received signal

output from the variable gain amplifier to be constant by controlling the gain of the variable gain amplifier by using the count value as the control signal (col. 17, lines 19-22). Kojima also teaches that the gain of the variable gain amplifier is proportional to the control signal (col. 21, lines 18-22). That is, Kojima teaches using a larger gain-adjusting step if the average variation of the reception power deviates from the desired value toward a larger value, and vice versa. Therefore, Kojima teaches the claimed varying the speed by which the gain is adjusted.

4. Claims 1, 2, 10, 11, 24, 25, 29 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (U.S. Patent No. 5,987,075, "Abe" hereinafter).

Regarding claim 1, Abe teaches an apparatus comprising: an estimating unit to estimate a distribution of input signal level (107, 110 in Fig. 2 or 3, col. 13, lines 13-17; col. 13, lines 22-30); and an integrator to adjust a gain based upon the distribution for an automatic gain control (111 in Fig. 2 or 111A in Fig. 3; col. 13, lines 36-54; col. 14, lines 20-31).

Regarding claim 2, wherein the estimating unit comprises: a comparator (107 in Fig. 2 or 3; col. 13, lines 13-17) to compare the input signal against one or more reference threshold values; and a counter (110 in Fig. 2 or 3; col. 13, lines 22-30) to estimate the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period.

Regarding claim 10, Abe teaches a method comprising: estimating a distribution of input signal level (107, 110 in Fig. 2 or 3, col. 13, lines 13-17; col. 13, lines 22-30);

and adjusting a gain based upon the distribution for an automatic gain control (111 in Fig. 2 or 111A in Fig. 3; col. 13, lines 36-54; col. 14, lines 20-31).

Regarding claim 11, wherein estimating the distribution comprises: comparing the input signal level against one or more reference threshold values (107 in Fig. 2 or 3; col. 13, lines 13-17); and estimating the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (110 in Fig. 2 or 3; col. 13, lines 22-30).

Regarding claim 24, Kojima teaches a communication system comprising: a receiver (101 in Fig. 2 or 3) to receive the analog signal, the receiver including an automatic gain control unit to maintain a constant level of the analog signal for processing in the receiver, the automatic gain control unit including: an estimating unit to estimate a distribution of input signal level (107, 110 in Fig. 2 or 3, col. 13, lines 13-17; col. 13, lines 22-30); and an integrator (111 in Fig. 2 or 111A in Fig. 3; col. 13, lines 36-54; col. 14, lines 20-31) to adjust a gain based upon the distribution for the automatic gain control (note that the output of 111 or 111A is used to control the variable gain amplifier 103 in Fig. 2 or 3). Also note that since the receiver receives the analog signal, it is inherent there is a transmitter to transmit an analog signal.

Regarding claim 25, wherein the estimating unit comprises: a comparator (107 in Fig. 2 or 3; col. 13, lines 13-17) to compare the input signal level against one or more reference threshold values; and a counter to estimate the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (110 in Fig. 2 or 3; col. 13, lines 22-30).

Regarding claim 29, Abe teaches an automatic gain control apparatus comprising: a comparator (107 in Fig. 2 or 3; col. 13, lines 13-17) to compare input signal level against one or more reference threshold values; a counter to count occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (110 in Fig. 2 or 3; col. 13, lines 22-30); and an integrator (111 in Fig. 2 or 111A in Fig. 3; col. 13, lines 36-54; col. 14, lines 20-31) to adjust a gain for automatic gain control, the gain adjusted based upon the occurrences counted (note that the output of 111 or 111A is used to control the variable gain amplifier 103 in Fig. 2 or 3).

Regarding claim 34, Abe teaches a method for automatic gain control comprising: comparing input signal level against one or more reference threshold values (107 in Fig. 2 or 3; col. 13, lines 13-17); counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (110 in Fig. 2 or 3; col. 13, lines 22-30); and adjusting a gain for automatic gain control based upon the occurrences counted (111 in Fig. 2 or 111A in Fig. 3; col. 13, lines 36-54; col. 14, lines 20-31; note that the output of 111 or 111A is used to control the variable gain amplifier 103 in Fig. 2 or 3).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 19-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al. (U.S. Patent No. 5,659,582, hereinafter "Kojima") in view of Scarpa (U.S. Patent No. 6,668,027).

Regarding claim 19, Kojima teaches a method comprising: estimating a distribution of input signal level (172, 150 in Fig. 14); and adjusting a gain based upon the distribution for an automatic gain control (130 in Fig. 14, note that the output of 130 is used to control the variable gain amplifier 106 in Figs 1-5). Kojima does not teach that the method is implemented by machine-readable codes. However, the use of software to implement an automatic gain control method is well known for at least the advantage of flexibility. Scarpa teaches implementing gain control method using software (col. 8, lines 50-61). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the gain control method of Kojima using software for the advantage of flexibility.

Regarding claim 20, Kojima teaches estimating the distribution comprises: comparing the input signal level against one or more reference threshold values (146, 148 in Fig. 14); and estimating the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (150 in Fig. 14).

Regarding claim 21, Kojima also teaches comparing the input signal level against a first reference threshold value and a second threshold value (upper threshold and lower threshold in Fig. 14); and counting occurrences in which the input signal level is above the first reference threshold value and occurrences in which the input signal level is below the second reference threshold value (col. 18, lines 20-28).

Regarding claim 23, Kojima teaches that the output count value of the counter 130 indicates whether the average variation of the reception power deviates from the desired value toward a smaller value or a larger value and the degree of deviation (col. 17, lines 14-18). It is therefore possible to control the power of the received signal output from the variable gain amplifier to be constant by controlling the gain of the variable gain amplifier by using the count value as the control signal (col. 17, lines 19-22). Kojima also teaches that the gain of the variable gain amplifier is proportional to the control signal (col. 21, lines 18-22). That is, Kojima teaches using a larger gain-adjusting step if the average variation of the reception power deviates from the desired value toward a larger value, and vice versa. Therefore, Kojima teaches the claimed varying the speed by which the gain is adjusted.

7. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,987,075, "Abe" hereinafter) in view of Scarpa (U.S. Patent No. 6,668,027).

Regarding claim 19, Abe teaches a method comprising: estimating a distribution of input signal level (107, 110 in Fig. 2 or 3, col. 13, lines 13-17; col. 13, lines 22-30);

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and adjusting a gain based upon the distribution for an automatic gain control (111 in Fig. 2 or 111A in Fig. 3; col. 13, lines 36-54; col. 14, lines 20-31). Abe does not teach that the method is implemented by machine-readable codes. However, the use of software to implement an automatic gain control method is well known for at least the advantage of flexibility. Scarpa teaches implementing gain control method using software (col. 8, lines 50-61). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the gain control method of Abe using software for the advantage of flexibility.

Regarding claim 20, Abe teaches estimating the distribution comprises: comparing the input signal level against one or more reference threshold values (107 in Fig. 2 or 3; col. 13, lines 13-17); and estimating the distribution by counting occurrences in which the input signal level is either above or below the one or more reference threshold values within a given period (110 in Fig. 2 or 3; col. 13, lines 22-30).

8. Claims 9, 18 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,987,075, "Abe" hereinafter) in view of Scarpa (U.S. Patent No. 5,563,916, listed in the IDS dated 1/29/02).

As explained in the rationale applied to reject claims 1, 10 and 34 above Abe teaches the claimed subject matter including multiple gain-adjusting steps (col. 14, line 30), but does not explicitly teach varying the speed which the gain is adjusted. Scarpa teaches using a larger step for faster adjustment when the signal level is outside the desirable range (col. 3, lines 59-63; col. 4, lines 4-9). Therefore, it would have been

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obvious to a person of ordinary skill in the art at the time the invention was made to vary the speed which the gain is adjusted, so as to reduce the gain-control processing time.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,987,075, "Abe" hereinafter) in view of Scarpa (U.S. Patent No. 6,668,027) as applied to claim 19 above, and further in view of Scarpa (U.S. Patent No. 5,563,916, listed in the IDS dated 1/29/02).

Abe in view of Scarpa teaches the claimed subject matter including multiple gain-adjusting steps (Abe, col. 14, line 30), but does not explicitly teach varying the speed which the gain is adjusted. Scarpa ('916) teaches using a larger step for faster adjustment when the signal level is outside the desirable range (col. 3, lines 59-63; col. 4, lines 4-9). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to vary the speed which the gain is adjusted, so as to reduce the gain-control processing time.

### ***Allowable Subject Matter***

10. Claims 7, 8, 16, 17, 22, 28 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wu et al. (U.S. Patent No. 6,870,891) teaches a method for controlling the AGC.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chieh M. Fan whose telephone number is (571) 272-3042. The examiner can normally be reached on Monday-Friday 8:00AM-5:30PM, Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read "Chieh M Fan". The signature is fluid and cursive, with the first name "Chieh" and last name "Fan" clearly distinguishable.

Chieh M Fan  
Primary Examiner  
Art Unit 2638

September 26, 2005